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may do a great deal with the co-operation of many medical and nursing individuals who are charitably inclined and glad to help out in cases of real need.

We are all beginning to realize that there is a real need of well-trained attendants, and when the need is sufficiently urgent, we shall set about some plan for furnishing these attendants.

NURSING IN NERVOUS DISEASES

FOURTH PAPER

THE OBSERVATION, DIFFERENTIATION, AND IMMEDIATE TREATMENT OF "FITS"

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THREE definite varieties of convulsive seizures will come under a nurse's observation. In a great many instances the duration of these attacks will be brief, she alone will have the opportunity of seeing all the stages of the attacks, and on her evidence alone a diagnosis may have to be based. Speaking broadly, one may divide the convulsive seizures of adults into three distinct groups: major epilepsy, in which no gross brain lesion can be found; focal or Jacksonian epilepsy, produced by localized irritation of part of the cerebral cortex; and the great group of the so-called functional fits, especially those in which well-marked motor phenomena predominate. We shall consider first the characteristics of a major epileptic seizure and contrast these with those of functional and hysterical attacks.

Major Epilepsy.—For purposes of description, the phenomena may be divided into four stages: (1) The warning or aura; (2) the tonic stage; (3) the clonic stage or stage of convulsions, and (4) the period of recovery.

1. The warning or aura: About 50 per cent. of epileptics are aware of the impending onset of an attack for a varying number of seconds before consciousness be lost. The warning or "aura" is any sensation which occurs during the retention of consciousness, which is of almost momentary duration, and which is immediately followed by the onset of tonic or convulsions. These warnings vary greatly, though they are

usually constant for each individual—a momentary tingling in a part of the body, the hand, foot, or face, in the order of frequency of occurrence, a slight twitching of the same parts, a subjective sensation of smell or taste, or possibly the aura may be represented by the sudden access of a great and inexplicable terror. In half the cases, however, the patient suddenly falls to the ground unconscious and rigid. In falling, the well known “epileptic cry” is often heard, but is more frequently replaced by a hoarse gurgle caused by a long inspiration through an almost imperforate glottis; the patient lies on the ground with all the muscles of the body in a state of tonic contraction, the arms widely abducted and the hands clenched; the body is frequently arched and owing to the rigidity of the respiratory muscles in common with the rest of the muscular system, the face becomes cyanosed, the face and lips being bluish or even of a dark purple color. This stage of tonic contraction lasts in most cases no more than a minute; consciousness is completely abolished and if the cornea be lightly touched with the finger, no defensive winking is produced.

Twitching movements usually begin in the face,—rapid opening and shutting of the eyes and spasmodic contraction of the muscles around the mouth being most common; jerking movements of the neck are rapidly followed by rapid alternate flexion and extension movements of the arms and legs, with considerable involvement of the trunk muscles. During this stage the tongue is usually thrust forward and may be severely wounded by being caught between the upper and lower teeth. Saliva is discharged from the mouth as froth and is frequently blood-stained owing to the bitten tongue. During this stage the sphincters are frequently relaxed, and involuntary evacuations of urine or less often of faeces occur.

The duration of this period is seldom more than three minutes and never more than five; it terminates gradually. The convulsive movements become less violent, occur less rapidly, and finally cease; the face resumes its normal color, the corneal reflexes slowly return, and the patient falls into a deep sleep which may last for an hour or more, and from which he awakes heavily and with some dull headache.

I want here to direct your attention to a phenomenon, which, if generally known, is generally overlooked; the condition of the plantar reflexes after the general epilepsy of the type I have just described.

Normally if one slowly draws a pencil or some such pointed instrument along the outer side of the sole of the foot, the great toe of that foot will be seen to be drawn downwards, *i.e.*, towards the pencil. Five

or eight minutes after the convulsive period of an epileptic seizure, if this plantar stimulus be applied, the great toe will be found not to be flexed downwards but to be extended upwards; this sign is in the majority of cases bilateral and persists for about half an hour after the cessation of an attack, after which the normal flexor reaction will again be found to be present.

You will at once recognize the importance and diagnostic significance of this sign; frequently an attack has already taken place and is passed before the patient can be properly observed and doubt may arise as to whether the attack has not been of an hysterical nature. This sign is never present after hysterical fits; it is almost always present after major epileptic fits; it persists, as I have said, for half an hour and it consequently is a most valuable sign by which to differentiate the two conditions; demonstration and practice in the wards will quickly teach a nurse how to elicit the plantar reflexes, and a report of their investigation should always be added to the nurse's description of the attack.

So much for the epilepsy of the major type. How are we to distinguish such seizures from so-called *functional* or *hysterical attacks*?

It would be impossible to describe all the different varieties of convulsions of hysterical nature. I shall attempt to describe what may be considered as a typical attack and then shall point out to you in what respects it differs from idiopathic epilepsy. The patient is most usually of the female sex, but this generalization is by no means as true as the frequency of its unqualified assertion would lead one to suppose, hysteria occurs quite commonly in men and boys. The onset of the attack may be determined by some emotional disturbance and is of a gradual nature. The patient complains of a choking sensation, becomes excited, may burst out crying, or may laugh wildly and without reason, then screaming continuously she throws herself to the ground or onto a convenient article of furniture. There she may pass into a tonic convulsion—the hands clenched, the head thrown back, and the spine arched sharply backwards; this obtains only for a short period, to be followed by general convulsions which differ acutely from those seen in epilepsy in being markedly purposive in character, the arms are flung around her head, wildly and melodramatically, the clothes may be torn, bystanders are fought, pushed, struck, scratched, kicked, and not infrequently bitten. This fury of agitation may continue for a prolonged period with remissions during which the patient lies exhausted and groaning with half-shut eyes.

The face is never livid as in epilepsy but shows merely the height-

ened color associated with violent and unaccustomed exertions. Consciousness is never lost; the corneal reflexes are present; the patient's movements, exclamations, or cries throughout the attack are frequently instigated and directed by the actions or words of the bystanders. The eyes are usually kept tightly closed and efforts directed towards opening the lids are strongly resented. It is most unusual for patients to do themselves any serious injury in the course of an hysterical fit. The production of subjective pain is limited to a minimum—from which it may be inferred that the severe scalp wounds, not infrequently produced in the epileptic by reason of his falling heavily to the ground, are never found in the course of a genuinely hysterical attack, and in the same way severe wounding of the tongue by biting is only found in epilepsy and not in hysteria. Evacuations of the bladder or rectum never take place in the course of an hysterical fit whereas in epilepsy these symptoms are common, in fact usual occurrences.

The termination of an attack of the nature I have described differs markedly in the majority of cases from that of an epileptic seizure. Rarely is there any period of stupor or drowsiness other than that degree of physical exhaustion which would naturally follow efforts of such violence as I have spoken of. The patient usually ceases her demonstration with dramatic suddenness and not infrequently inquires naïvely of the bystanders as to her whereabouts, consciousness being obviously complete.

After the cessation of an hysterical attack the reflexes are found to be of the normal type in every instance, the plantar reflex is never of the extensor type that obtains after epileptic seizures.

The next type of fit which we must consider is that known as *Jacksonian Epilepsy*, so-called from its original describer, Dr. Hughlings Jackson, of London. If we look at the map of the surfaces of the brain we will see that certain areas have been found to subserve certain functions; that one part of the brain surface governs the movements of the arm on the opposite side of the body, another part the opposite side of the face, another the leg, yet another has to do with the property of vision in the opposite visual field, and so on.

You will also notice that these areas have been found to bear a constant topographical relationship with each other, and you will remember your physiological teachings that the external surfaces of the cerebrum are composed of irritable cortex, which fact in turn will cause you to remember the fact that if any of these "irritable centres" be stimulated or irritated, a movement characteristic of that centre will be

produced, *i.e.*, if the right arm centre be stimulated the left arm will move, and further that if the stimulus to the right arm centre be sufficiently powerful, some of that stimulus will flow over into the adjacent centre or centres, with the result that soon after the left arm has moved the left leg or the left face or both will also twitch. You will have produced, then, by your experiment an artificial attack of Jacksonian epilepsy.

This is precisely what occurs when any foreign body such as a tumor, a blood clot, or a piece of skull, depressed through injury, impinges and irritates any of the specialized brain centres. As we are attempting to differentiate the various types of motor fits I shall more especially confine my description to Jacksonian epilepsy as the result of irritation of the motor areas.

Let us suppose that a patient has a tumor growing in the neighborhood of and irritating the face centre on the right side of the brain—you will remember that the order of the motor areas from below upwards is first face, then arm, then leg. What will be the probable course of events as regards objective motor phenomena? Usually the patient will tell some bystander, most probably his nurse, that he feels queer and, if this be not his first attack, that he is going to have a fit. He will perhaps complain of numbness or tingling in the left side of the face, which sensation will shortly be followed by a few irregular twitches of the left angle of the mouth. These spasmodic contractions will follow each other in quicker and quicker succession, and with increasing violence and range, until the whole of the left side of the face is involved in clonic convulsion. The patient is acutely conscious of his condition, the eyes show a characteristic look of distress, and he will only be prevented from speech by the involuntary movements of his mouth.

After a few minutes, evidence of "spread" is found,—the left arm becomes involved; first the fingers begin to twitch, at first slowly and irregularly, later rhythmically and more quickly, then the wrist becomes involved, then the elbow and the shoulder, so that the whole limb executes clonic movements, the joints being usually held in a position of semi-flexion. Consciousness is still retained. Then the left trunk muscles become clonically convulsed; the muscles of the left thigh follow suit, and then those of the left leg. Consciousness still retained. At any stage of the attack the irritant may cease to act, whereafter the movements gradually disappear; but, on the other hand, the "spread" of the stimulus may extend to the opposite hemisphere, with the result that the right side becomes affected like the left side, through an inverse order.

When both sides of the brain have become involved, consciousness is usually lost. The duration of such attacks is quite variable; they may last but a few minutes, while I have seen an attack of focal epilepsy involving the left side last for eighteen hours with but a few short intermissions. When the attack has passed there is usually marked weakness in the affected limb, which, however, is of a purely temporary character as are the changes of the reflexes of the same side, which include in most instances exaggeration of the deep reflexes, abolition or depression of the abdominal reflexes, while the plantar reflex for a variable period following the attack is of the extensor type. You will notice that the changes in the reflexes here are confined to the affected limbs and are not bilateral as they are in so-called idiopathic epilepsy.

In her report of any case of Jacksonian epilepsy, a nurse must be especially careful to specify distinctly the starting-point and mode of "spread" of the convulsions, for the data may have to be used as the only evidence on which a highly responsible diagnosis can be based; therefore, think clearly, observe minutely, and report accurately.

As regards the immediate treatment there is but little to be said from the nurse's standpoint. In true epilepsy, one's efforts should be directed towards the prevention of injury to the patient through the violence of the convulsions. It is only possible in such cases as give warning of the onset of a fit to catch the patient before he falls to the ground. Neckbands should be rapidly loosened and something should be inserted between the teeth to prevent the tongue being bitten,—a handkerchief or a towel is usually most convenient. When the attack has passed the patient should be lifted to his bed or couch; where he should be left quietly to sleep and allowed to awaken naturally.

To cope adequately with a severe hysterical fit is in most instances beyond the nurse's province without explicit directions from the physician in charge of the case. Exhortation is usually worse than useless! and more radical measures, such as the use of strong faradism or cold water douches, had best be left to the medical man unless the latter expressly directs otherwise. The unpopularity of these apparently ruthless remedies among patients and patients' relatives makes it advisable that this case should be confined to those who can best shoulder the responsibility! A whiff of chloroform is probably the only agent for cutting short an attack of Jacksonian epilepsy; this, of course, can only be administered by the physician, therefore when an attack occurs send for the latter, be an expert witness, and present to him when he arrives a full and detailed report of all that has taken place under your observation.

<i>Epilepsy</i>	<i>Hysteria</i>	<i>Jacksonian Epilepsy</i>
Onset: usually sudden and frequently causeless	Gradual and usually induced by some emotional stress	Begins gradually with twitching of some one part of body, finger, toe or face.
Bilateral	Bilateral	Unilateral
Sudden loss of consciousness	No loss of consciousness	No loss of consciousness
General tonicities	Probably general tonicities	No tonicities
Face livid and cyanosed	Face red or pale	Face red and distressed
Corneal reflex absent	Corneal reflex present	Corneal reflex present
Generalized purposeless symmetrical convulsion	Purposive movements of one, two, or all four limbs	Gradual spread of "twitching" to other limbs of same side
"Unconscious" stertorous breathing	Frequently screaming and shouting	Groaning or silence
Tongue often bitten severely	Lips may be bitten. Tongue rarely or never bitten	Tongue not bitten
Sphincters relaxed	Sphincters never relaxed	Sphincters never relaxed
Ends gradually in drowsiness or stupor	Ends usually abruptly without ensuing stupor	Ends gradually, headache and fatigue later; no stupor
	Hysterical convulsions	
Duration: A single attack never lasts more than five minutes	Duration indefinite and usually dependent on treatment	Duration indefinite—minutes to hours

It must be remembered that Jacksonian epilepsy may often begin as a purely focal attack, remain unilateral for a lengthened period, and then become bilateral, at which time the patient loses consciousness and passes through all the phenomena of a prolonged attack of major epilepsy.

SOME COMMON DIGESTIVE DISTURBANCES

By ANNE E. PERKINS, M.D.

(Continued from page 621.)

Probably the most frequent complaint of the intestinal tract is constipation, a disturbance of intestinal peristalsis, a delay of the passage faeces along the colon or from the rectum. That occurring in the colon is outside the control of the will, but when in the rectum it is largely